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EVALUATION OF ERTS DATA FOR

CERTAIN OCEANOGRAPHIC USES

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1. Work Summary During Seventh Bimonthly Reporting Period

A large portion of our effort this period was spent with the multiband photographs (ERTS-1 simulation) we obtained on our October aircraft survey over Lakes Erie and Ontario. Comparisons are being made of color and thermal signatures using the Spectral Data photos and the Daedalus Imagery. These results will be related to ERTS. In some instances, we are seeing that over a time interval of two hours great differences can occur in circulation patterns as seen by the aircraft and ERTS--both ship and aircraft surveys of water masses can never get the broad overview of a region necessary for circulation measurements.

We are now expanding our algal study of Lake Erie to study the 9 Sep 72 ERTS-1 imagery. It appears, although the day was a hazy one, that more algae was present on the 9th than was seen on the 15 Oct aircraft flight. In every case, the thick algal streaks displayed a hot thermal characteristic in the mid-morning sun. The darker-highly absorbing visual tone of the algae is believed responsible for this warming.

We expect a significant finding will be reported shortly regarding the flooded nearshore areas in Eastern Michigan and Northern Ohio. This flooding is due to record breaking high water levels in Lake Erie this year. The areas have been mapped for this calculation and for the most part, are confined to the Western half of Erie.

A significant result was reported 13 July on "Anomalous Dark Patches" observed in certain ERTS-1 images. This sunglint related feature is possible whenever the solar elevation is greater than 55° and the surface waters are calm. It is observed in all MSS bands. Although the bright specular point is nearly 300 n. miles (540 km) from nadir no bright specular returns are possible with a 0930 local time descending path - only diffuse glitter, that may reach reflectance levels of 1-2% under wind speeds of 5-10 m/sec and solar elevations greater than 60° .

2. Expected Accomplishments During Next Reporting Period

- a. Work with the October aircraft flights should be completed.
- b. 9 September 72 CCDT's will be processed for algal study.
- c. 17-18 Feb 73 CCDT's will be processed for ice motion details in Lake Erie.
- d. Circulation atlas of key turbidity areas will be continued through 1973 for current vs. wind relationships.
- e. --NOAA-2 VHRR-IR will be correlated with ERTS.

Excellent thermal data have been acquired and await digitization at NESS.

3. Problems Encountered

The only problems are NESS related. It is a slow tedious process to digitize the VHRR data at NESS but selected scenes are becoming available and we expect some relief from this hindrance this fall with the installation of our new computer.

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